

technology, which is based on the information of typical robot and coating production management, is carried out, and a comprehensive technical study on the intelligent design of coating based on a single data source is carried out.

A. Research on Intelligent coating process characteristics for equipment and Management

The equipment and management information related to the coating process is sorted, the data logic of the relevant information and the coating process information is established, the data structure is unified, and the general expression of the process characteristics is realized.

B. Research on Intelligent Design of Coating for Typical Robot

Taking the typical painting robot as the research object, the geometric information, spatial information, process information and other related process characteristics are systematically analyzed, and the data interface with the definition of painting design engineering is established. Combined with the process decomposition technology, the connection between coating design data and intelligent equipment is realized.

C. Research on Intelligent painting Design Technology for production Management Informatization

Based on the standardization definition of the coating design project, the coating process data (derusting method and grade, coating grade and name, coating process, etc.) and production management information (coating operation environment management, coating quality management, coating film thickness management, engineering plan management, etc.) are established. The logical relation of coating material management, coating working hour management, coating safety management, etc.) is used to form the data interface, and the connection between the application intelligent design technology and the production management information is realized. The existing coating production management system is shown in Figure 2.1 below.

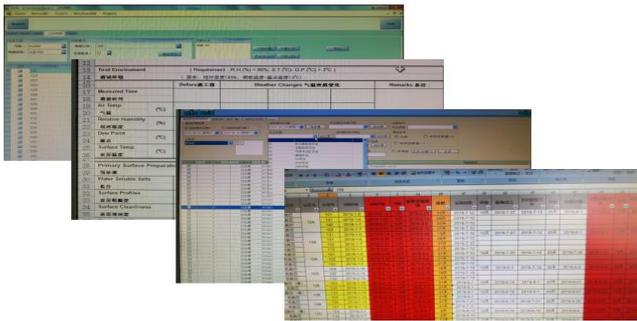


Fig 2.1 Coating Production Management Interface

D. Research on Intelligent Design Technology of painting based on single data Source

Based on the single data source of three-dimensional model, the coating intelligent design technology based on single data source is established by using the painting intelligent design technology of typical robot and the painting intelligent design technology of coating production management information, and the comprehensive technology of painting intelligent design based on single data source is established through data integration.

IV. RESEARCH ON APPLICATION TECHNOLOGY OF INTELLIGENT PAINTING DESIGN

The coating design covers a large amount of data information such as the paint supplier, the series of products, the technical parameters of the products, the coating construction process and the like. The process design of coating process also has the characteristics of complexity, multi-factor and experience. Under the background of different design software, the integrity modeling of the coating process is realized to solve the problem of the extraction, transmission and exchange of data instructions between the coating management system and the intelligent spraying equipment by the surface space position information, the geometric information and the process information of the coating structure.

A. Study on the Integrity of the Three-dimensional Model for the Intelligent Design of the Coating

Based on the three-dimensional model, the painting design, production, management and other information are combed, the relevant digital standards are established, and the complete product digital definition information is integrated with a single data source.

B. Research on the Technology of the Design of the Application of the Design Tools for the Application of the Intelligent Design

According to the requirement of 3D model integrity feature of painting intelligent design, the auxiliary development of design tool is carried out, and the intelligent extraction technology is formed to realize the accuracy and integrity of painting intelligent design.

C. Application of Intelligent painting Design based on typical Segmentation

A typical section based on the requirements of coating process and matching complexity is selected, and the design application verification and evaluation are completed by applying the intelligent design system of coating intelligent design for the process requirements of the intelligent spraying equipment.

V. SUMMARY

The application of intelligent technology is the inevitable development trend of all kinds of businesses in the future, and the painting in the shipbuilding industry will inevitably progress with the development of the times. The intelligence of painting design, production and management will greatly improve the efficiency of ship painting operation and make the development of the shipbuilding industry enter a new stage.

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Chao Xu, School of Naval Architecture & Ocean Engineering, Jiangsu University of Science and Technology, Zhenjiang, Jiangsu, China

Hong Zhou, Professor, School of Naval Architecture & Ocean Engineering, Jiangsu University of Science and Technology, Zhenjiang, Jiangsu, China

Jianfeng Liu, chief technologist of Waigaoqiao shipyard, Shanghai, China